

3

could be used to divert and control the flow of other fluids, and this use would be considered within the scope of the present invention. Other objects and advantages will become apparent from the following description, in which reference is made to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial schematic view of a water heating tank for use in accordance with the present invention;

FIG. 2 is a side perspective view of a baffle for use in accordance with the present invention;

FIG. 3 is a side perspective view of the inner cap of the baffle of FIG. 2;

FIG. 4 is a side elevational view of the baffle of FIG. 2;

FIG. 5 is a side elevational view of the baffle of FIG. 2 taken along line A—A of FIG. 4;

FIG. 6 is a top plan view of the inner cap of the baffle of FIG. 2;

FIG. 7 is a top plan view of the outer cap of the baffle of FIG. 2;

FIG. 8 is a side elevational view of an alternate embodiment of the invention;

FIG. 9 is a side elevational view of an alternate embodiment of the invention; and

FIG. 10 is a graph of booster outlet temperature vs. time in a prior art booster not utilizing a baffle in conformance with the present invention; and

FIG. 11 is a graph of booster outlet temperature vs. time in a novel booster utilizing a baffle in conformance with the present invention.

#### DETAILED DESCRIPTION

Referring to FIG. 1, the apparatus and method of the present invention is preferably used in a water heating tank, generally designated 10. While a generally annular tank 10 is preferred, the tank may also be other suitable shapes, including saddle shaped, rectangular shaped, etc. The tank 10 preferably includes a water inlet 12 near the bottom of the tank 10, a water outlet 14 near the top of the tank 10 and a heating element 16. A baffle assembly, generally designated 20, is positioned over the water inlet 12 in order to re-direct and slow the flow of water entering the tank 10 so that the turbulence in the tank 10 is minimized. The baffle assembly 20 is preferably of relatively simple construction, is generally inexpensive to produce, and may be used in water boosters of the type used in commercial warewashing applications.

In a preferred embodiment, as shown best in FIGS. 2-7, the baffle assembly 20 is positioned over the inlet 12 to the water heating tank 10 and consists of an inner cap 22 and an outer cap 24. The inner cap 22 is preferably a collar-like base 26 with a cover 28 attached to the top portion of the base 26. The cover 28 is preferably provided with openings 30 which may be of varying shapes and sizes, although in the preferred embodiment shown herein as best seen in FIGS. 3 and 6, the openings 30 are generally trapezoidal in shape.

As shown best in FIGS. 2 and 5, the outer cap 24 preferably consists of a cover 32 and a flange 34 which depends downwardly from the cover 32 around the base 26

4

of the inner cap 22. The outer cap 24 is positioned above and spaced apart from the inner cap 22 such that water from the inlet 12 may flow through the openings 30 and impinge against the bottom of the cover 32 of the outer cap 24. The water then flows relatively smoothly along the inside of the flange 34 and out into the tank 10. The outer cap 24 is preferably attached to the inner cap 22 by a rod or bolt 36 which is attached to the cover 32 of the outer cap 24 through hole 38 and through the cover 28 of the inner cap 22 through hole 40. While this method of attaching and spacing apart the inner 22 and outer 24 caps is shown and described in the preferred embodiment, it is to be understood that other structures, including brackets or posts attached directly to the inside of the tank 10 could be used to support the outer cap 24 above the inner cap 22 and are considered within the scope of the invention.

As shown best in FIG. 8, in an alternate embodiment of the invention, the baffle assembly 20B consists of an outer cap 24B having a flange 34B that depends downwardly therefrom. In this embodiment, the inlet 12 includes an inlet pipe 50 which extends at least partially into the tank 10. A bracket 52 including a spacer element 54 is used to position the outer cap 24B over the inlet pipe 50 thereby deflecting the incoming water away from the tank 10 outlet (not shown). In a preferred version of this embodiment, an inner cap 22B having perforations therein is provided to help control fluid flow into the tank 10.

As shown best in FIG. 9, in another alternate embodiment of the invention, the baffle assembly 20C consists of an outer cap 24C having a flange 34C that depends downwardly therefrom. In this embodiment, a bracket 60 is used to position the outer cap 24C over the inlet 12 thereby deflecting the incoming water away from the tank 10 outlet (not shown). In a preferred version of this embodiment, an inner cap 22C having perforations therein is provided to help control fluid flow into the tank 10.

As shown in FIGS. 10 and 11, water booster heaters incorporating a baffle in accordance with the present invention have shown significant improvement in temperature control for booster outlet temperature. Specifically, as can be seen in FIG. 10, prior art boosters not incorporating an inlet baffle in accordance with the present invention, exhibit large temperature fluctuations of booster outlet temperatures over cycle time. In contrast, as shown in FIG. 11, water booster heaters incorporating an inlet baffle as described herein exhibit booster outlet temperature having little fluctuation over cycle time.

While the form of the apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention.

#### What is claimed is:

##### 1. A fluid heating tank comprising:

- a fluid heating tank laying on its side and having an inlet located in an annular sidewall of said tank at a lower portion of said tank and an outlet located at an upper portion of said tank higher than said inlet; and
- a baffle assembly positioned within said tank over said inlet, said baffle assembly comprising:

5

an inner cap positioned over said inlet including a collar-like base having an inner cover attached to the top portion of said base said inner cover having openings therein to control fluid flow into said tank; and

an outer cap attached to and spaced apart from said inner cap by a spacer, said outer cap having a flange depending downwardly therefrom such that water flowing through said inlet may flow through said openings and impinge against a bottom of said outer cap continuing relatively smoothly along the inside of said flange and out into said tank. 5 10

2. The fluid heating tank of claim 1 wherein said flange at least partially surrounds said inner cap.

3. The fluid heating tank of claim 1 wherein said openings are trapezoidal in shape. 15

4. The fluid heating tank of claim 1 wherein said outer cap is generally square in shape.

5. The fluid heating tank of claim 1 wherein said inner cap is generally square in shape. 20

6. The fluid heating tank of claim 1 wherein said tank is a water heating booster for use with a commercial ware-washer.

6

7. A fluid heating tank comprising:

a fluid heating tank laying on its side and having an inlet located in an annular sidewall of said tank at a lower portion of said tank and an outlet located at an upper portion of said tank higher than said inlet; and

a baffle assembly positioned within said tank over said inlet, said baffle assembly comprising:

an inner cap positioned over said inlet including a collar-like base having an inner cover attached to the top portion of said base, said inner cover having openings therein to control fluid flow into said tank; and

an outer cap positioned over said inner cap wherein said outer cap is supported by brackets depending from said sidewall of said tank, said outer cap having a flange depending downwardly therefrom such that water flowing through said inlet may flow through said openings and impinge against a bottom of said outer cap continuing relatively smoothly along the inside of said flange and out into said tank.

\* \* \* \* \*